

## CLAIMS

What is claimed is:

- 1 Sub B1 1. A method for classifying an item, the item having a plurality of attributes,  
2 each attribute having a value, the method comprising:
- 3 selecting an attribute of the item;
- 4 comparing the value of the attribute of the item to a set of possible attribute  
5 values, the possible attribute values being associated respectively, with item  
6 classifications;
- 7 selecting at least one item classification for the item based on the comparison; and  
8 determining a confidence score for each selected item classification for the item.
- 1 2. The method of Claim 1 wherein the set of possible attribute values  
2 comprises an engineered knowledge base of classifications, each classification associated  
3 with at least one attribute and each attribute associated with at least one attribute value.
- 1 3. The method of Claim 1, further comprising:  
2 selecting a second attribute of the item if one selected item classification does not  
3 have a sufficiently high confidence score;
- 4 comparing the value of the second attribute of the item to a set of possible second  
5 attribute values, the possible second attribute values being associated, respectively, with  
6 item classifications;
- 7 selecting at least one item classification for the item based on the second  
8 comparison; and  
9 determining a confidence score for each selected item classification of the second  
10 comparison.

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1           4.     The method of Claim 1, further comprising:  
2           comparing the value of the attribute of the item to a second set of possible  
3     attribute values, the possible attribute values being associated respectively, with the item  
4     classifications;  
5           selecting at least one item classification for the item based on the second  
6     comparison; and  
7           determining a confidence score for each selected item classification for the item.

1           5.     The method of Claim 3 wherein each set of possible values comprises an  
2     engineered knowledge base, the engineered knowledge bases comprising at least one of a  
3     primary engineered knowledge base of key item attribute values, an engineered  
4     knowledge base of a classification schema, and an engineered knowledge base of an  
5     alternated classification system.

1           6.     The method of claim 3 wherein the engineered knowledge base of a  
2     classification schema contains a plurality of item classifications mapped to a second  
3     classification schema.

1           7.     The method of Claim 1 wherein comparing the value of the attribute and  
2     selecting at least one item classification are performed independent of a subject matter of  
3     the item classifications, the subject matters including one or more of electronic, office  
4     products, and medical supplies.

1           8.     The method of Claim 1 wherein comparing the value of the attribute and  
2     selecting at least one item classification are performed independent of a language of the  
3     item and independent of a language of the set of possible attribute values.

1           9.     The method of Claim 1 wherein the attribute is a part number of the item.

1 10. The method of Claim 1 wherein the attribute is a description of the item.

1 11. The method of Claim 1 wherein comparing the value of the attribute  
2 comprises performing a search for a matching value among the set of possible attribute  
3 values.

1 12. The method of Claim 1 wherein comparing the value of the attribute  
2 comprises performing a search for a value among the set of possible attribute values that  
3 is within a range.

1 13. The method of Claim 1 wherein determining a confidence score comprises  
2 determining a percentage of items in an item classification that contain an attribute value  
3 found in the respective comparison and assigning a higher confidence score for attribute  
4 values contained in a higher percentage of items in the respective item classification.

1 14. The method of Claim 1 wherein determining a confidence score comprises  
2 determining a degree of similarity between the value of the attribute and the  
3 corresponding attribute value of the selected item classification.

1 15. The method of Claim 1 further comprising presenting the item and the  
2 selected item classifications from the comparison to a user.

1 16. The method of Claim 1 wherein the confidence scores are presented to the  
2 user in association with the corresponding item classifications.

1 17. The method of Claim 1 further comprising analyzing the attribute value of  
2 the item against a stop list and excluding any stop list words from the comparison.

1 18. The method of Claim 1 further comprising:

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2 presenting the selected item classifications to a user; receiving a designation from  
3 the user of at least one selected item classification; and classifying the item in the  
4 designated item classifications.

1 19. The method of Claim 1 further comprising comparing confidence scores  
2 for all selected item classifications and classifying the item in at least one of the selected  
3 item classifications based on the confidence score comparison.

1 20. The method of Claim 1 further comprising automatically classifying an  
2 item if the confidence score is above a threshold and presenting the selected item  
3 classifications to a user if the confidence score is below the threshold.

1 21. The method of Claim 1 wherein comparing the value of the first attribute  
2 comprises successively executing a plurality of searches, each successive search having  
3 more general criteria and wherein determining a confidence score comprises assigning a  
4 lower confidence score to the results of each successive search.

1 22. The method of Claim 1, further comprising:  
2 selecting a classification for the item;  
3 supplementing the set of possible attribute values with attribute values of the item.

1 23. The method of Claim 22 wherein the set of possible attribute values  
2 initially contains no attribute values, the method further comprising repeating selecting an  
3 attribute, comparing the value of the attribute, selecting at least one item classification,  
4 selecting a classification, and supplementing the set of possible attribute values for a  
5 plurality of items so that as each item is classified, the set of possible attribute values is  
6 increased.

1           24.    A method for classifying an item, the item being associated with a  
2 plurality of descriptive terms, the method comprising:  
3           searching a reference list of descriptive terms to find descriptive terms  
4 corresponding to the descriptive terms associated with the item, the reference list of  
5 descriptive terms including at least one item classification for each descriptive term and a  
6 confidence score for each item classification of each descriptive term;  
7           compiling the item classifications and associated confidence scores for each found  
8 corresponding descriptive term in the reference list to determine a confidence score for  
9 each item classification;  
10          ranking the item classifications for each found descriptive term using the  
11 compiled confidence scores.

1           25.    The method of Claim 24 wherein searching the reference list comprises  
2 successively executing a plurality of searches, each successive search having more  
3 general criteria and wherein compiling the confidence scores comprises adjusting the  
4 confidence scores so that a score is lowered for each successive search in which the  
5 corresponding descriptive term is first found.

1           26.    The method of Claim 24 further comprising presenting the item  
2 classifications and rankings to a user.

1           27.    The method of Claim 24 further comprising:  
2           receiving a designation of at least one item classification from the user; and  
3           classifying the item in the designated classifications.

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1           28.     The method of Claim 24 further comprising automatically classifying an  
2     item if the confidence score is above a threshold and presenting the selected item  
3     classifications to the user if the confidence score is below the threshold.

1           29.     The method of Claim 24 wherein the descriptive terms in the reference list  
2     are associated with possible attributes of the item and wherein the confidence score  
3     depends upon the attribute with which the descriptive term is associated.

1           30.     The method of Claim 24 wherein searching comprises searching for  
2     descriptive terms associated with the same attribute as the attribute of the item associated  
3     with the searched descriptive term.

1           31.     The method of Claim 24, further comprising:  
2             classifying the item in at least one of the item classifications for a found  
3             descriptive term; and  
4             supplementing the reference list with descriptive terms associated with the item.

1           32.     The method of Claim 24 wherein the reference list comprises an  
2     engineered knowledge base, the engineered knowledge base comprising at least one of a  
3     primary engineered knowledge base of key item attribute values, an engineered  
4     knowledge base of a classification schema, and an engineered knowledge base of an  
5     alternated classification system.

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2           33.     The method of claim 24 wherein the engineered knowledge base of a  
3     classification schema contains a plurality of item classifications mapped to a second  
3     classification schema.

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1           34.     A machine-readable medium having stored thereon data representing  
2 sequences of instructions which, when executed by a machine, cause the machine to  
3 perform operations comprising:  
4           selecting an attribute of the item;  
5           comparing the value of the attribute of the item to a set of possible attribute  
6 values, the possible attribute values being associated respectively, with item  
7 classifications;  
8           selecting at least one item classification for the item based on the comparison; and  
9           determining a confidence score for each selected item classification for the item.

1           35.     The medium of Claim 34, further comprising instructions which, when  
2 executed by the machine, cause the machine to perform further operations comprising:  
3           selecting a second attribute of the item if one selected item classification does not  
4 have a sufficiently high confidence score;  
5           comparing the value of the second attribute of the item to a set of possible second  
6 attribute values, the possible second attribute values being associated, respectively, with  
7 item classifications;  
8           selecting at least one item classification for the item based on the second  
9 comparison; and  
10          determining a confidence score for each selected item classification of the second  
11 comparison.

1           36.     The medium of Claim 34, further comprising instructions which, when  
2 executed by the machine, cause the machine to perform further operations comprising:

3 comparing the value of the attribute of the item to a second set of possible  
 4 attribute values, the possible attribute values being associated respectively, with the item  
 5 classifications;  
 6 selecting at least one item classification for the item based on the second  
 7 comparison; and  
 8 determining a confidence score for each selected item classification for the item.

1 37. An apparatus for classifying an item, the item having a plurality of  
 2 attributes, each attribute having a value, the apparatus comprising:

3 a classification knowledge database containing a plurality of values, each  
 4 associated with at least one category;

5 a search engine to select an attribute of the item, to compare the value of the  
 6 attribute of the item to a set of possible attribute values of the classification knowledge  
 7 database, to select at least one item classification for the item based on the comparison,  
 8 and to determine a confidence score for each selected item classification for the item.

1 38. The apparatus of Claim 37 wherein the search engine is further to select a  
 2 second attribute of the item if one selected item classification does not have a sufficiently  
 3 high confidence score, to compare the value of the second attribute of the item to a set of  
 4 possible second attribute values, of the classification knowledge database, to select at  
 5 least one item classification for the item based on the second comparison, and to  
 6 determine a confidence score for each selected item classification of the second  
 7 comparison.

1 39. The apparatus of Claim 37 wherein the search engine is further to compare  
 2 the value of the attribute of the item to a second set of possible attribute values, the



- 3 possible attribute values being associated, respectively, with the item classifications, to
- 4 select at least one item classification for the item based on the second comparison, and to
- 5 determine a confidence score for each selected item classification for the item.

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